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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,800	02/15/2001	Joseph S. Gordon	064441.0207	2724

31625 7590 10/07/2002

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EXAMINER

CHANG, AUDREY Y

ART UNIT PAPER NUMBER

2872

DATE MAILED: 10/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/784,800

Applicant(s)

GORDON ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on July 31, 2002, which has been entered as paper number 5.
- By this amendment, the applicant has amended claims 7-9, 12, 17-19, 21, 26 and 29 and has canceled claims 1-6.
- Claims 7-30 remain pending in this application.
- The objections to the drawings set forth in the previous Office Action dated May 1, 2002 are withdrawn in response to applicant's amendment.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 17-25 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.**

The reasons for rejection are set forth in the previous Office Action dated May 1, 2002. They are repeated as follows.

The specification fails to teach adequately as how could the thin film be capable of "optimizing the transmission for the off-axis incident light". It is not clear if *different* thickness of the thin film is being made at different incident angle or position to enable the optimization or the film has a uniform

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thickness through out that enables the optimization. Claims 18-25 inherit the rejection from their respective based claim.

3. Claims 7-16 and 26-30 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 7 and 26 have been amended to include the phrase "the optical thickness operable to produce a transmission maxima for normal incidence light wavelength greater than exposure wavelength *in order* to maximize transmission of the exposure wavelength at an angle of incidence grater than zero" is *not* making any scientific sense. The conditions (1) the transmission maxima for normal incident being shifted from the exposure wavelength and (2) having maximized transmission of the exposure wavelength at incident angle greater than zero are **both the results** of the thickness of the pellicle. One condition **does not** cause the other, the phrase "in order" is wrong. Claims 8-16 and 27-30 inherit the rejection from their respective based claim.

4. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 18 has been amended to include the feature "*increasing* the optical thickness by less than or equal to approximately one-quarter of the exposure wavelength in order to produce the transmission maxima. The specification fails to teach why the optical thickness for the pellicle film, which *has already produced* the transmission maxima, is further, "*increased*" by less than or equal to one-quarter of the exposure wavelength *in order to* produce the transmission maxima."

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5. **Claims 7-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.**

The reasons for rejection are set forth in the previous Office Action dated May 1, 2002.

Claim 7 is **single means claims** that are not in combination with any other recited elements of means that are subjected to undue breadth rejection under 35 USC 112, first paragraph, since the claims **covers every conceivable structure** for achieving the stated property while the specification discloses at most only those known to the inventor. Claims 8-16 inherit the rejection from their respective based claim. Applicant fails to response this rejection.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 7-9, 17, 19 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Nose et al (PN. 5,742,386).**

Nose et al teaches an *exposure system* for detecting foreign matter that is comprised of a *pellicle* (50), that is comprised of a *thin film*, fixed to a *pellicle frame* (51), made of *aluminum*, in order to cover a pattern portion on a *photomask* (52), (please see Figures 1 and 6, column 1, lines 44-54 and column 4).

Nose et al teaches that the pellicle with the thin film, having certain optical thickness, is capable of making the transmission of the light with incident angles at off axis (such as 10⁰, 30⁰, 60⁰ as shown in

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Figure 7) to be at *100 percent*. This pellicle with thin film therefore is capable of *maximizing* the transmission of light at off axis at an exposure wavelength.

With regard to the features concerning the thin film produces a transmission maxima at a wavelength between one nanometer to twenty nanometer above the exposure wavelength, since the “exposure wavelength” is arbitrary defined, the condition is implicitly met by identifying the exposure wavelength to always meet with the condition.

Claims 7, 17, and 26 have been amended to include the feature that the optical thickness of the pellicle film produces a transmission maxima for normal incident light at a wavelength greater than an exposure wavelength, wherein the optical thickness also contributes to maximize transmission of the light having exposure wavelength at an incident angle greater than zero. Nose et al teaches that by varying the optical thickness of the pellicle film the maximized transmittance of the light of an exposure wavelength can be achieved at incident angles greater than 0 as shown in Figure 7. Although this reference does not teach explicitly that for these thicknesses the transmittance for the normal incident will occur at wavelengths greater than the exposure wavelength, however such feature is implicitly included. Since it is known in the art that the maximum transmittance of the pellicle film is determined by the equation: $m * \lambda = (2 * n) * d$, with m being an integer, λ being the exposure wavelength, n being the refractive index of the pellicle film and d being the thickness of the film and it can be easily calculated that for $n = 1.5$ and the thickness d being $0.86 \mu\text{m}$ the wavelengths for having maximum transmission is greater than the exposure wavelength $0.488 \mu\text{m}$, (as referred to Figure 7).

This reference has therefore anticipated the claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nose et al.**

The reasons for rejection (claim 16) are set forth in the previous Office Action dated May 1, 2002 and paragraphs above.

Claim 18 has been amended to include the feature having the optical thickness being increased by one-quarter of exposure wavelength. This feature has been rejected under 35 USC 112, first paragraph, set forth in the paragraph above and it can only be examined here broadly. It is known in the art that the transmission maximum is determined by the optical thickness ($n * d$) of the pellicle film to be half multiple or multiple of the exposure wavelength ($m * \lambda / 2$). By making the optical thickness to be odd quarter of the exposure wavelength (namely by adding one-quarter wavelength to the value of $(m * \lambda) / 2$), the angular positions of the constructive interference for light passes through the pellicle film will change which therefore makes the transmittance maxima shifted.

10. **Claims 10-15, 20-25 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nose et al in view of the patent issued to Fukumitsu et al (PN. 4,657,805).**

The reasons for rejection are set forth in the previous Office Action dated May 1, 2002.

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Response to Arguments

11. Applicant's arguments with respect to claims 7-30 have been considered but are moot in view of the new ground(s) of rejection. The newly amended claims have been fully considered and they are rejected for the reasons stated above.

12. Applicant's arguments have been fully addressed in the paragraphs above.

13. The applicant is respectfully reminded that the word "maxima" is plural form so, the phrase "a transmission maxima" is wrong.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US patent issued to Hamada et al (PN. 5,368,675) teaches specifically the relationship between the optical thickness of the pellicle film and the exposure wavelength as the transmittance becomes maximized.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

16. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

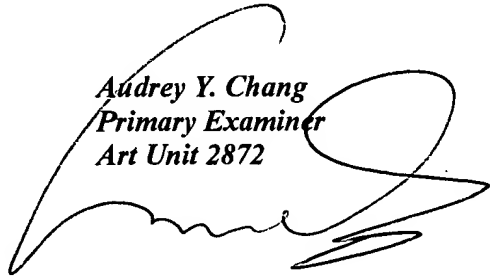
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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.
October 1, 2002